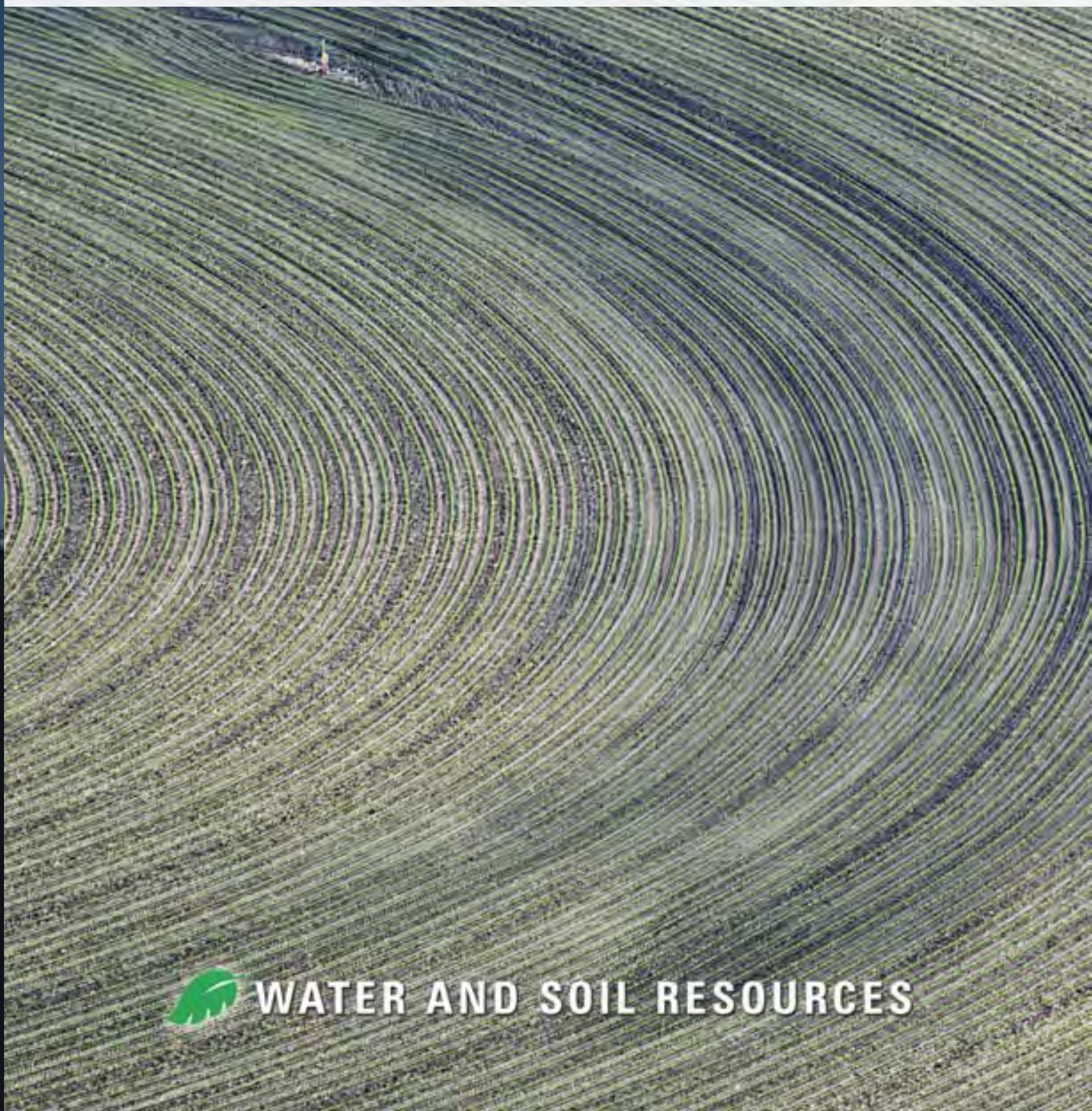
MISSOURI resources

Fall 2010 • Volume 27 • Number 3



WATER AND SOIL RESOURCES

director's comment

The sweet smell drifting from a field of wildflowers, the sounds of wildlife playing like a symphony orchestra in nature and the view of the bright sun beaming down through a dense canopy of trees … these are just a few of the experiences that can be had while working in Missouri State Parks. This summer, hundreds of youth participated in the State Parks Youth Corps program and worked to help sustain Missouri's state park system while exploring their values in the great outdoors.

The program was a partnership between the Department's Division of State Parks and the Missouri Department of Economic Development's Division of Workforce Development. Corps participants learned valuable work-skill training while providing many improvements and services to your state parks and historic sites.

Positions included trail workers and office assistants, as well as concession, interpretive, park/site, maintenance/ landscaping, website and communication aides. The corps workers spent hours improving trails in the state park system; providing seasonal interpretation; assisting with social media marketing efforts; and assisting on the Katy Trail Ride. Some learned plumbing, roofing, painting, archeology and restoration skills for the first time as they helped complete long-needed repairs.

The work completed by the State Parks Youth Corps is similar, on a much smaller scale, of course, to the work done by the Civilian Conservation Corps. President Roosevelt instituted the CCC program in the 1930s. Workers provided unskilled manual labor to help develop rural areas across the United States. Both the CCC program and the American Recovery and Reinvestment Act of 2009 were created as a means to help energize the economy. The State Parks Youth Corps program, funded through the Recovery Act, and the work completed by the CCC, also included an additional benefit. Both provided the workers and public with an opportunity to get outside and enjoy our cultural, natural and recreational resources within Missouri's state parks and historic sites.

You may read further about the State Park Youth Corps projects in this issues' One Last Word or visit the Department's website at: mostateparks.com. The work completed by both corps is a tremendous benefit to Missouri and I hope you can take time to get outside and enjoy the benefits of their hard work.

Bill Bryan
Missouri Department of Natural Resources

MISSOURI resources

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Mission Statement
The mission of the Missouri Department of Natural Resources
is to protect, preserve and enhance Missouri's natural, cultural and energy resources.

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MISSOURI DEPARTMENT OF NATURAL RESOURCES

WATER AND SOIL RESOURCES

Above: Managed grazing on pasture outside of Sedalia has cattle feeding on the left while new growth progresses on the right.
Front Cover: A field of soybeans in Pettis County is terraced, tiled and planted on the contour to prevent damaging soil erosion.
Back Cover: Towering clouds usher in a summer thunderstorm over Lake of the Ozarks State Park near Osage Beach.
DNR photos by Scott Myers.

For the Love of t

Sustain and Gain With Soil and Water Conservati

Life changed forever for Jean Hobbs and Tammy Sarratt the day their dad moved these "city girls" to a farm in his hometown in southwest Missouri. Although today they strongly feel that farming promotes relationships, provides a good work ethic and makes you feel good about your accomplishments, they didn't always feel that way.

While bucking hay bales one summer, a teary-eyed Tammy, then a teenager, looked at Jean and proclaimed, "When I leave here, I'm never coming back!" And, for a short while, both girls traveled different roads. Little did they know, the lofty hills, green valley and rolling stream of the family farm would eventually lure them back and rekindle an interest in farming.

Today, Tammy, along with her husband John, and sister Jean both work cow and calf operations on a total of more than 600 acres in McDonald County. In recent years, both households have made their job easier by implementing voluntary conservation cost-share practices offered by both the Missouri Department of Natural Resources' Soil and Water Conservation Program (SWCP) and the Natural Resources Conservation Service (NRCS).

It all started when Heath Cobine, a technician for both the Newton and McDonald county Soil and Water Conservation Districts, noticed Hobbs hitting golf balls in her yard and stopped by to chat with her about cost-share practices that were offered. Hobbs had recently purchased a few cows, so Cobine suggested that she attend a grazing school, which was taught by University of Missouri Extension and

he Land:

ti on Cost-Share Practices

by Jennifer Sieg
photographs by Scott Myers

NRCS staff. Attendance is required to participate in grazing management practices. Her skeptical sister Tammy tagged along.

Both women were impressed by what they learned at the school. With the "Show-Me" attitude, the Sarratts were still skeptical, so they decided the Hobbs operation would be the "guinea pig." With the help of Nathan Witt, NRCS, and Cobine, Hobbs installed 3,500 feet of fence, almost as much pipe and three water tanks for her rotational grazing system, which encompassed 72 acres.

"It was overwhelming at first," said Hobbs, "but now I love it!"

Hobbs soon influenced the Sarratt family to do the same.

"At the time, our fence had been damaged by an ice storm, so we decided to proceed with the practice," said John Sarratt. "The rotational grazing system is the greatest improvement that we've done."

With a rotational grazing system, several areas are fenced off and watering systems are developed. Rotating livestock between paddocks helps reduce soil erosion and makes the best use of water resources. Not only do these grazing systems help the environment, they also provide many operational advantages.

One tremendous benefit is how much easier it is to herd the cows.

"The grazing system has transformed the animals' behavior. They are now used to being herded. We can also look them over as they are going between paddocks. It has saved Tammy and me a lot of headaches and frustration," said John.

Both farmers were hesitant to install electric fences, which aren't re-

(Left) An aerial photo illustrates how waterways and terraces direct water to an impoundment reservoir on Selken Farm LLC in Pettis County, east of Sedalia. (Below) After purchasing cows for her farming operation in McDonald County, Jean Hobbs attended an MU-Extension grazing school and implemented a rotational grazing system. Other conservation cost-share practices soon followed.

quired with the practice, but are less expensive. Now, both can't say enough positive things about them.

"If a limb falls on the fence, the flexible poles just bounce back up. It has saved endless hours of fence repairs," said John. "The bungee gates are so easy to get through and I have a remote to turn the fences on and off as needed," added Hobbs.

Realizing the many gains that came with the rotational grazing system, Hobbs and the Sarratts jumped into several other cost-share practices.

"John shocked all of us when he called the office and told us he wanted to fence off his stream – something he said he'd never do," said Cobine.

Keeping livestock out of the stream reduces nutrients such as nitrogen and phosphorus in the stream and allows revegetation of grasses and trees on the stream bank to reduce erosion.

Both landowners fenced off more than 300 acres of woodland to reduce erosion and have started pest and nutrient management programs to improve their pastures. These practices combined have reduced the need for brush hogging, made it easier to find cattle and possible for the Sarratts to expand their herd.

The Sarratts and Hobbs took advantage of both the SWCP's cost-share practices, funded by Missouri's parks, soils and water sales tax, and the federally funded NRCS Environmental Quality Incentives Program (EQIP). The grazing systems, pest management and woodland exclusion practices were done through EQIP, while the stream protection and nutrient management practices were through the Missouri Department of Natural Resources' SWCP. Staff from both programs work together in the U.S. Department of Agriculture building in Neosho.

(Top) This turkey litter storage and composting shed in Osage County is typical of farming operations that reduce disposal, pollution and costs by turning waste into valuable fertilizer.
(Below) A University of Missouri-Extension grazing school is held on a farm near Buffalo in Dallas County. John and Tammy Sarratt hosted a tour of their farming operation as part of a McDonald County grazing school, co-sponsored by the Natural Resources Conservation Service.

"I was really skeptical of working with government programs. This is the first time I've seen state and federal government entities working so well together," said John Sarratt. "We wouldn't have done any of this without Nathan (Witt) and Heath (Cobine). Nathan didn't cut any corners and the success is reflective of that. I am happy with everything that we've done," he added.

"I would recommend all of these practices to anyone," Hobbs added. "With a full-time job away from the farm, these practices have made the farm work much less overwhelming."

Cobine and Witt work closely to provide the best options for agricultural landowners in the area.

"We work together as a team and get through each project complimenting each program's strengths and weaknesses," said Cobine.

Both SWCP and NRCS are working toward the same goals – to reduce soil erosion and protect water quality.

"It's great when you have people that truly appreciate the benefits of

(Left) Tammy Sarratt and Heath Cobine of the NRCS discuss the cattle watering arrangement on Tammy's sister's – Jean Hobbs' – cattle farm.
(Below) Regular nutrient management is a beneficial practice on the Sarratt and Hobbs farming operations.
(Bottom) This dairy farm near Hartville in Wright County employs a proper animal waste management system. This not only benefits the operation itself, but protects the air, land and water on surrounding properties.

conservation practices," Cobine said. "Word of mouth in the farming community is our best form of advertising."

Both farms have seen improvements to their natural resources.

"Farmers, in general, have an appreciation for land. We want to protect it and these practices make it sustainable. With the benefits to my operation and to the land, this is a win-win situation," Hobbs said.

In June, the Sarratts hosted a tour of their farm as part of the local grazing school.

The Sarratts are confident that their two college-age daughters will not return to run the farm after they retire. However, that's what Jean and Tammy said. So, *if* the girls should return, the land and water will be in great shape for them to pick up, right where their parents left off.

How to Improve Your Farm

Just like the Sarratts and Hobbs, you can improve your farm. The Department of Natural Resources' Soil and Water Conservation Program provides financial and technical assistance to agricultural landowners for conservation practices, which can save you time and money and increase your farm's production while protecting the overall natural environment. The program administers funds from the sales tax through 114 local soil and water conservation districts. The districts focus on seven resource concerns to control soil erosion and protect water quality on agricultural land. Landowners can receive up to 75 percent cost-share to install the following practices through their local district.

Sheet, Rill and Gully Erosion

The concern: Sheet, rill and gully erosion is the unwanted removal of soil from the land surface or through channels incised by the action of rainfall and runoff.

The solution: If you see problems like this on your farm, you could establish a good vegetative cover to stabilize the soil; build terraces to reduce the erosive force of water; use a no-till system; plant trees and shrubs at the edge of fields to help with wind erosion; build a pond to catch sediment; develop diversions to direct rainwater; and plant sod-forming grasses to efficiently transport rainfall.

A settling basin minimizes impact to the adjacent lagoon by breaking down animal waste and provides fertilizer for the Wright County dairy farm pictured on the previous page. Improved pastures and better crop production result from the application of this nutrient.

Nutrient and Pest Management

The concern: The runoff from poor nutrient and pest management practices can affect water quality on your property as well as, potentially, the property of neighbors.

The solution: To prevent excessive chemical runoff, you can adopt new management techniques and technologies for applying commercial fertilizer, pesticide or herbicide; properly use manure as a plant nutrient source; and move excess manure from areas saturated with nutrients to land where they are needed.

Woodland Erosion

The concern: Woodland erosion is caused by the removal of soil or vegetation through livestock trampling or improper tree harvesting.

The solution: To protect woodlands and water from the impacts of livestock or recover an already damaged area, you can plant trees and shrubs; install fence to exclude livestock; ensure that timber harvest operations use proper construction of logging roads and stream crossings; and correct and control gully erosion through proper timber harvest practices.

Irrigation Management

The concern: Some irrigation systems do not distribute water evenly causing excessive runoff and overuse.

The solution: The cost-share practices in this concern will assist you in efficiently and uniformly applying water, applying the appropriate amount of nutrients and chemicals, and conserving water with upgrades to your existing sprinklers and nozzles; the efficient conveyance of water from a source to the point of application; the collection and reuse of irrigated runoff; creating a closed system of water transport; the retention of irrigation water on the field; and underground piping and water control structures to manage excess water.

Animal Waste Management

The concern: The improper management of animal waste can affect both water and air quality.

The solution: To protect the quality of water and air on your land, you can collect, control and manage your agricultural waste, manure and litter; safely dispose of livestock and poultry carcasses; and construct a composting facility to break down animal waste to be used to improve soil fertility and crop production.

Sensitive Areas

The concern: Sensitive areas are areas of agricultural land where current management has negatively impacted soil erosion, surface water and existing groundwater.

The solution: For the protection of water quality in streams, you can plant grass buffers or woody species along the edges of crop fields or below cropland to trap runoff; plant trees or shrubs to reduce wind erosion; construct fencing to exclude livestock from streams; and place large stones or anchored cedar trees to stream banks suffering from erosion. To protect groundwater, you can establish buffers or exclusion around sinkholes; create spring collection points for livestock use; and fill and seal abandoned wells.

Grazing Management

The concern: The steady use of an area by livestock can cause erosion problems, affect water quality and limit soil productivity.

The solution: You can make the best use of soil and water resources by improving the vegetative cover on pastures; initiating a planned grazing system that may include developing water sources and water distribution; adding fencing to construct paddocks; applying lime to manage the pH of the soil; and the interseeding of legumes.

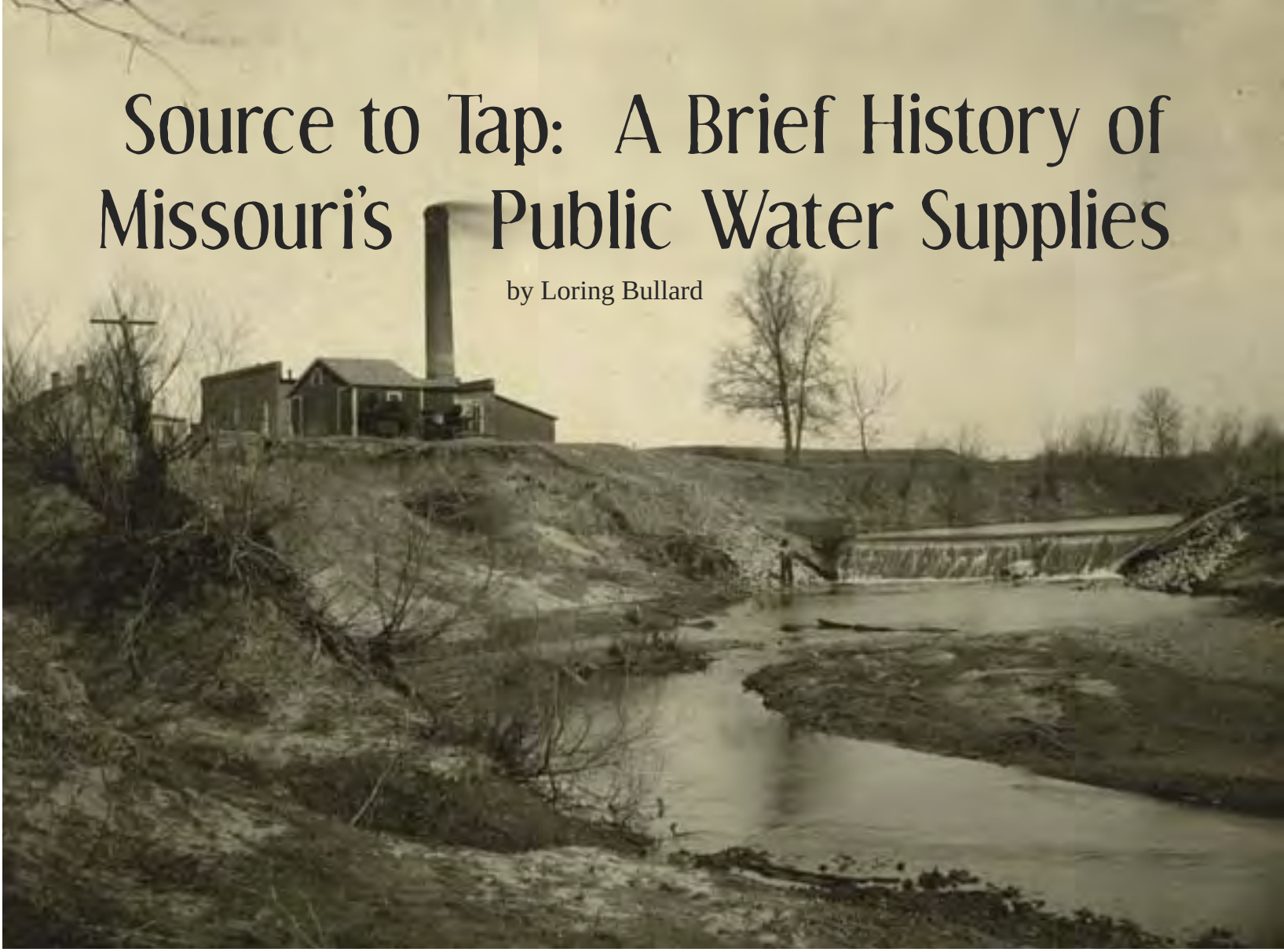
How to Get Started

A call or visit to your local soil and water conservation district office will get you on your way to improving your farm through conservation practices. For more information or to find the district office nearest you, call 800-361-4827 or visit: dnr.mo.gov/env/swcp/. This website also offers more details about each practice, the step-by-step process for completing a cost-share practice and a downloadable brochure.

Jennifer Sieg was a public information specialist with the Department's Soil and Water Conservation Program. She currently works as a park operations and planning coordinator with DNR's Division of State Parks.

Source to Tap: A Brief History of Missouri's Public Water Supplies

by Loring Bullard



The Maryville dam and water plant as it appeared in the late 1800s.

The State Historical Society of Missouri

Like most Americans, Missourians take their safe, readily available water supplies for granted. Nearly nine out of 10 state residents are served by a public water system. The state's four largest cities – St. Louis, Kansas City, Springfield and Independence – have provided public drinking water to their citizens for well over 100 years. Like the communities that fostered them, our water systems have grown and evolved through the years, reflecting technological improvements and the changing expectation of urbanites.

Citizens in urbanizing areas recognized early on that cisterns, springs and shallow wells would not be enough – that public water would be essential to their community's prosperity and growth. By 1880, two-thirds of American cities with populations exceeding 2,500 had obtained a public water supply. In most communities, rather than public health concerns, fire protection became a leading argument for water delivered in pipes under pressure. After disastrous fires in New York and Chicago, the number of waterworks in the country jumped from 244 in 1870 to 598 in 1880. Businesses found that insurance rates dropped significantly with the installation of pressure mains and high capacity fire hydrant systems.

St. Louis, one of Missouri's oldest cities, acquired the state's first waterworks in 1831, when the city was a bustling commercial center of about 6,000 residents. Not until the 1870s did other Missouri cities, such as Sedalia and Kansas City, obtain waterworks. In the 1880s, waterworks were built for the cities of Hannibal, Louisiana, Independence, Lexington, St. Charles, Washington, Carrollton, Clinton, Fulton, Marshall, Bonne Terre, Holden, Maryville, Carthage, Rich Hill, Chillicothe, Mexico, Moberly and Trenton. Also in the 1880s, one man – Paul Perkins of Geneseo, Ill. – constructed waterworks for Springfield,

Boonville, Jefferson City, Nevada and Joplin. In the 1890s, 34 cities in the state established waterworks. By the 1920s, systems were in place in most Missouri cities.

One of the decisions facing cities was their choice of a water source. St. Louis, Kansas City, Hannibal, Boonville and St. Joseph naturally chose the big rivers at their doorsteps. Warrensburg, Palmyra, Springfield, Webb City, Bolivar, Mt. Vernon, Aurora and Neosho used nearby springs, although most of these cities eventually switched to deep wells or impoundments. Other cities, especially in north Missouri, such as Bethany, Marceline and Cameron, used impoundments on creeks. However, some of these northern facilities suffered from heavy siltation and proved inadequate during droughts.

After the development of hydraulic rotary drilling in the 1890s Louisiana oil fields, deep well drilling became commonplace. Drillers could now reach into the hard bedrock to find usable groundwater, and most of Missouri's towns and smaller cities eventually turned to wells.

In the Bootheel, a well point driven into the sands and gravels just below the surface could access huge volumes of water. In some areas of the state, the groundwater was heavily mineralized and nearly unusable. In Clinton, for example, an 800-foot well drilled in 1887 produced very saline water so it was used for a mineral water resort. A second well, only a few hundred yards away, turned out to be "fresh."

In 1907, Edward Shepard, working for the U.S. Geological Survey, published a survey of the state's public water supplies. He recorded 103 public systems, with 34 using wells, 12 on springs, 39 using rivers or streams and 18 using some combination of streams and wells. To a great extent, this diversity of sources reflects the underlying geology and hydrology of our state.

Another question facing cities was deciding who would own and run the waterworks. Most of Missouri's early systems were built by private companies, but cities often secured the option of buying the system at the end of the contract. Citizens fell heavily on both sides of this question. Some thought that private companies could operate more efficiently and others believed that municipal ownership would allow the city to direct growth and expand services as desired – thus controlling its own destiny.

In the Bootheel, a well point driven into the sands and gravels, just below the surface could access huge volumes of water.

A panoramic view of the Fulbright water treatment plant, around 1925, shows the electric pump station and filtration plant to the left, auxiliary steam plant, center, and engineers' housing on the ridge at the far, upper right, obscured by trees.

City Utilities of Springfield archives

The State Historical Society of Missouri

In 1835, St. Louis became the first Missouri city to acquire its waterworks after the private company faltered. Kansas City followed suit in 1895, spending $3.1 million after experiencing considerable controversy over water quality and rates. Springfield tried to buy its system in the early 1900s for about $700,000, but found itself afoul of state limitations on the issuance of bonds. The city finally purchased the waterworks in 1957, but by then the price had climbed to nearly $20 million.

Certain problems were common to the early waterworks. In the days before meters, neighbors frequently shared hydrants, short-circuiting water company revenues. Some suppliers attempted to track authorized use through cumbersome prescriptive billing systems – charging per water closet or tub, for example, and separately for lawn watering or street sprinkling. Metering eventually solved many of these problems, but there was early resistance to the use of meters as well, with some public health advocates claiming that metering would discourage bathing and cleanliness.

Perhaps the biggest issue facing water suppliers was quality. Between 1870 and 1920, when most of Missouri's communities obtained public water supplies, few standards were in place to define water "purity." Bacterial testing was not routinely used until the 1920s. This often created public relations nightmares for water suppliers. They insisted their water was "pure," but had no scientific information to prove it. When customers learned in the latter part of the 19th century that germs in water could cause disease, they clamored for absolute purity.

None of Missouri's early suppliers used water treatment as we know it today, and it was not uncommon for tap water to become murky, adding to the public's fear of contamination. Operators tried to control quality through the selection of sources, the timing of pumping, or by constructing settling basins. Nevertheless, the water sometimes looked or smelled bad. It is interesting to note that even before treatment, and in spite of varying quality, public water supplies were already saving lives. Statistics compiled by the Massachusetts Board of Health showed that in the 20 years from 1865 to 1885, when all of the larger towns in the state obtained public water, typhoid rates fell from 13 per 10,000 people to three.

Some cities tried to alleviate fouled sources by moving intakes. In 1860, William Carr Lane, medical doctor and former St. Louis mayor, lamented the fact that his city's water once would "remain sweet for more than a fortnight, in an earthen jar or barrel," but now suffered "great deterioration from nuisances of every conceivable description and unavoidable cast into the river above the waterworks."

He argued for the intake to be moved above the city, and it was. In 1887, Kansas City switched from the Kaw (Kansas) River, where floodwaters sometimes backed sewage and slaughterhouse wastes toward the intake, to the more powerfully flowing Missouri River, even though several large cities upstream discharged sewage into it.

The fear of waterborne disease drove suppliers to upgrade treatment. Experiments with filter designs in the 1880s at the Lawrence, Mass. experiment station showed that sand filtration could drastically reduce typhoid germs from source waters. It took a while for the technology to spread, howev-

DNR photo by Scott Myers

(Top) The public water well for the city of California was completed in 1903.
(Above) The Chain of Rocks water intake on the Mississippi River, for St. Louis, was opened in 1894, at the same time the drinking water plant became operational. Another intake was added in 1911.

"Every tumblerful contains an acre of land in solution."

- Samuel Clemens on early 1900s St. Louis water

DNR photo by Scott Myers

The city of Columbia's only drinking water plant, located at McBaine, accesses water from wells in the floodplain. It began operation in 1972 and has been expanded and upgraded several times since then. The facility bears little resemblance to public water plants of a century ago.

er, and less than 2 percent of the urban population of the United States drank filtered water by 1890. In Missouri, pre-1900 sand filtration systems were installed at Hannibal (1882), Rich Hill (1886) and Louisiana (1899).

Cities using big rivers also faced problems with high sediment loads. Samuel Clemens once observed of St. Louis drinking water that "every tumblerful contains an acre of land in solution." St. Louis added larger settling basins in the 1880s and began using a coagulant to improve clarity just before the 1904 World's Fair, at least partly to avoid the embarrassment of clouding up the fair's water features.

Kansas City began chlorinating its water to kill germs in 1911 and passed an $11 million bond issue for a rapid sand filtration plant. In Springfield, rains in 1909 washed out a reservoir dam, muddying the water for days. By Thanksgiving 1910, the water company had installed a 6 million-gallons-per-day sand filtration plant.

After the widespread adoption and installation of filtration and disinfection, water suppliers experienced few problems with murky or contaminated drinking water. By the late 1920s, Missourians drank public water with little fear of waterborne disease.

Today, issues of rates, water pressure, complying with regulations and public versus private ownership continue. The threats of drought, development, pollution and overuse can still damage or diminish our water supplies. We simply cannot afford to lose the supplies we have today to pollution or wasteful practices. It is fair to assume that at some point, there may be no new sources for Missouri's water suppliers to turn to, or enough high-quality source capacity to meet our state's growing demands.

Loring Bullard, of Springfield, is executive director of the Watershed Committee of the Ozarks, a citizen-based organization dedicated to the protection of public drinking water sources for the city of Springfield and Greene County.

Rain Barrel Reveal

Saving From a Rainy Day

by Philip J. Tremblay
photographs by Scott Myers

April showers may bring May flowers, but in Springfield, they also announce the annual Rain Barrel Reveal. Area artists and students from the Ozarks Technical Community College Fine Arts Department spend winter months turning traditional rain barrels into works of art.

The 55-gallon barrels reduce storm water volume in urban areas and thus prevent yard and street pollution washing into storm drains and reaching surface and underground water sources. They collect water from roof downspouts and store it to be used for watering gardens, landscaping or other non-drinking uses. Why not add some color to the fight against water pollution?

This year's creations carried such names as "Garden Mist," "When the Wind Blows," "Rain Haiku," "Rain Dance," and "Urban Farm." They were located for viewing at several Springfield businesses throughout April. On the first weekend in May, the beautified rain barrels were gathered at the ArtsFest on Springfield's historic Walnut Street for their final public showing.

During the following week, bids were placed locally, on eBay or submitted by e-mail. This is the fourth year the decorative barrels were sold to raise money for the James River Basin Partnership's water quality programs.

This year's artists included Dale Augusston, Rita Bear, Lillian Fitzpatrick and Cindy Quayle – local talents, some of whom have participated before. Also included were selected works by OTC art students Brittany Jenkins, Abby Adams, Gillian Moore and Hyekyung Kim.

The James River Basin Partnership is a grassroots, not-for-profit organization that works to improve and protect water quality of springs, streams, rivers and lakes in the James River Watershed – nearly a million acres in parts of seven counties. Other JRBP programs are helping develop backyard rain gardens, assistance for pumping out septic systems, lawn soil testing to help avoid over-fertilization and showing how trees and other vegetation can protect stream banks and shorelines.

A decorative rain barrel enhances the landscaping at this Springfield apartment complex and provides a future source of water for the surrounding plants. Overflow can seep into the gravel bed below it.

Build Your Own Rain Barrel

- **Clean the barrel**
  Use food-quality containers, not ones that held harsh chemicals. Rinse the inside of the barrel with a mixture of 1/8 cup of bleach and 5 gallons of water to wash away food or juice remnants.
- **Install a hose spigot**
  To install a 3/4" hose spigot, drill a 15/16" hole for the spigot threading just a few inches from the bottom of the barrel. This will provide a few inches of clearance for attaching a hose or filling a watering can and will allow for debris to settle below the outlet to reduce clogging.
- **Build a platform**
  Concrete cinder blocks provide a strong, stable and level platform for your rain barrel. If you use more than one layer of blocks, stack them in a crisscross pattern so they won't tip over.
- **Connect downspout to barrel**
  Position the barrel at its set height and measure where you need to cut or disconnect your downspout. Often you can disassemble the downspout at the gutter by taking out screws or drilling out rivets. If you do have to cut it off, use a fine-toothed hacksaw blade or tin snips.

  A flexible downspout extender makes an easy transition from the downspout to your barrel lid and eliminates the need for exact measurement because it bends and stretches to the length you need.
- **Cut barrel opening**
  Place the downspout connection in the barrel. If your barrel comes with a lid, or if it has a sealed top, you will need to cut a hole in it.

  The following websites provide do-it-yourself specifics:

  home.comcast.net/~leavesdance/rainbarrels/construction.html [very specific]

  www.watershedactivities.com/projects/spring/rainbarl.html [simple, with diagrams]

  www.portlandonline.com/shared/cfm/image.cfm?id=182095 [brochure]

(Right) Cindy Quayle, a veteran Rain Barrel Reveal artist and member of the Springfield Art Council, stands with her entry – Jack Pines at Georgian Bay, Lake Huron.

The JRBP was formed in 1997 as a project of the Southwest Missouri Resource Conservation and Development Council. In August 1999, the JRBP became an autonomous organization, relying on grant funding and membership donations from individuals, businesses and governments across the watershed in order to continue their efforts.

The success of the partnership is linked to the participation of committed, local citizens involved in JRBP projects, programs and events. The Rain Barrel Reveal is a promotion for the rain barrel program – "Save it FROM a Rainy Day – Fill 1,000 Barrels." Two styles of rain barrels are available through partnerships with Wickman's Garden Village and the Habitat for Humanity ReStore in Springfield. More information can be found at: jamesriverbasin.com/.

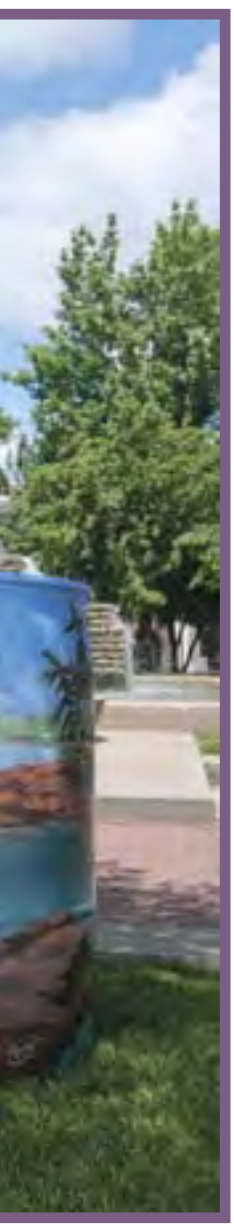
Cisterns and rain barrels were once common in Missouri. Now that water resources have become threatened in many areas and rising water bills encourage the use of free rain water, they are regaining popularity. According to the JRBP, an average home with 1,000 square feet of roof will generate about 600 gallons of water from a one-inch rainfall.

Bridging The Gap, a Kansas City environmental action group, offers workshops

on how to make a simple rain barrel. Contact Beau Baker at: beau.baker@bridgingthegap.org for more information.

Last year, for the first time, the Metropolitan St. Louis Sewer District offered its customers the opportunity to purchase 55-gallon rain barrels to collect and store rainwater that would otherwise flow into storm drains. The MSD is running a $2 billion, multi-decade campaign to clean up local waterways by stopping sewage overflows. Overflows occur when moderate to heavy rainfall taxes the storm water system. For updates, contact Debbie Johnson at MSD's Division of Public Information at 314-768-6238.

In mid-March 2010, Columbia held its first annual Barrel Roll, in conjunction with a Rain Barrel Art Review. Similar to the Springfield event, participants were encouraged to walk around to view painted rain barrels. Participants could vote on their favorite design at Orr Street Studios and enjoy music, awards for artists and food. Local artists painted 14 plastic drums destined to become rain barrels and available for sale. An auction of the painted rain barrels was held on eBay and ran until March 28.



The events were held to raise awareness about the Missouri River Communities Network and issues caused by storm water runoff.

Rain barrels can be purchased at many local home improvement stores or online for a variety of prices. Fundraising auctions can boost the price to several hundred dollars for a popular entry. Some websites offer the fully equipped rain barrel for a bit more than $200. The Bridging the Gap workshops set a base price of $45 per barrel for workshop participants. With recycled materials and borrowed tools, other websites show how a rain barrel can be assembled for around $20. Ingenuity is the key.

Many people make rain barrels out of 50-gallon food-grade plastic drums that were used to carry juices, olives, pickles and other liquids. Confirm that they were not used to ship harmful chemicals. These may be found for around $10 from recyclers or drum and barrel suppliers. Other barrel sizes generally range from 40 to 70 gallons.

Decide where to place the barrel – most place them under a downspout for easy attachment. Consider the distance to your plants, gardens and flower beds.

If your house lacks gutters, put the barrel under a valley in the roof that sheds a lot of water. Put a screen over an open barrel to keep out debris, small animals and insects. A system of closed barrels linked by pipes or hoses can store even more water.

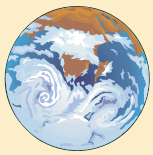
There are also diverters that can route rain water to your rain garden when the barrel storage is full. You may buy or build a rain barrel, but in any event, you will be keeping storm water under control and available for reuse. When the cost of lawn watering shrinks and the garden and flowerbeds thrive, this makes the effort even more worthwhile.

A rain barrel work of art provides the basis for a water distribution system that carries water to various parts of the home's yard and garden.

Philip J. Tremblay is a public information coordinator for the Department and assistant editor of Missouri Resources.

news briefs

Exploring Energy for Science Week



During Earth Science Week, Oct. 10-16, the Department of Natural Resources will partner with the American Geological Institute and others to engage young people and the public in learning about Earth's energy resources.

Events will highlight energy resource questions that earth scientists explore: Where do energy resources come from? How are they found and harnessed? How has energy use changed over time? What is the importance of renewable energy? What does science tell us about timely issues such as conservation and public safety? Where are the energy careers of the future likely to be?

Three national contests are slated for Earth Science Week: photography, visual arts, and essay contests – all focused on the theme of "Exploring Energy." These will allow students and the general public to learn about earth science, and compete for prizes.

For more information about Earth Science Week and ways to become involved, including local events, contests and classroom activities, visit: dnr.mo.gov/geology/. Watch also for the first annual National Fossil Days coming soon.

Holocaust Victims Honored by Students

It took 13 years and 6 million pull tabs, but students at Lewis and Clark Middle School, Jefferson City, have completed their effort to remember the victims of the Holocaust.

With help from other schools and members of the community, the tabs filled 34 barrels. They will be donated to the St. Louis Holocaust and Learning Museum in St. Louis, which will receive money from the recycling value of the aluminum tabs.

Justin Perkins was a seventh grader in 1997 when he got the idea for the project. He is now 25 and a substitute teacher in the Jefferson City School District. He was on hand at an assembly in May 2010 to celebrate Lewis and Clark Middle School finally reaching the goal.

Shirley Mosinger, St. Louis, also attended. She lost 27 of her ancestors in the Holocaust, and wrote a letter to the students years ago, after seeing a newspaper article about the project. She sent them 27 tabs in the envelope in honor of those lost family members. She hopes the project will leave an impression on all the students that have worked on this over the 13 years.

Dan Rich, a curator at the St. Louis Holocaust and Learning Museum, said he has heard of only one other project like this ever being completed, when students in Tennessee collected six million paper clips. He noted that genocides have continued around the world since the Holocaust, in places like Darfur, the Congo and Burma.

Google Doodle Winner From El Dorado Springs

Makenzie Melton, age 9 and in the third grade at El Dorado Springs R-2, has been named 2010 National Winner in Doodle 4 Google, a competition where K-12 students are invited to design the home page logo for the Google Internet search engine. The theme was: "If I Could Do Anything, I Would …"

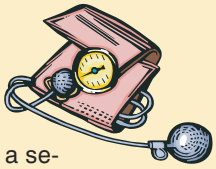
Melton said, "I chose this doodle because the rainforest is in danger and it is not fair to the plants and animals. I love everything except spiders and snakes, but I would still save them."

Her design was selected from more than 33,000 student submissions from all over the country. She received a $15,000 college scholarship, a netbook computer and a $25,000 technology grant for a new computer lab at her school. Her doodle was also featured on the Google.com home page on May 27, 2010.

This year, a group of well-known illustrators, cartoonists and animators from organizations like Disney, The Sesame Street Workshop, Dr. Seuss Enterprises, Charles M. Schulz Creative Associates and Peanuts and Pixar animation studios helped select the 40 finalist doodles and attended the awards ceremony to personally meet the winners.

For the first time, Google went to classrooms all across the United States as part of the Doodle 4 Google competition. Throughout the school day, on May 18, Googlers visited the schools of the top 40 Regional Finalists. Go to: google.com/logos/index.html to see Melton's, as well as past doodle winners.

Mercury Drop-off Effort Begins



In an effort to remove mercury from homes, the Department of Natural Resources has opened a series of drop-off points across the state.

The Department is working with fire departments and county health offices to provide drop-off buckets in communities. Private citizens and nonprofit agencies can visit these sites and leave instruments, including thermometers, blood-pressure cuffs, thermostats and switches that contain mercury.

Persons disposing of these items should put them in two zip-top bags enclosed in a sealed container, such as a coffee can or plastic tub, which prevents a mercury release if the item breaks during transport. Items can be dropped off through Oct. 22, when they will be transported to Jefferson City for recycling and disposal.

For more information, go to the Department's Web page at: dnr.mo.gov/newsrel/ and scroll to the June 18 news releases detailing regional drop-off sites.

Survey Grant for Geothermal Energy

As part of a $17.79 million grant from a U.S. Department of Energy project to assess renewable geothermal energy resources across the

country, the Department of Natural Resources' Division of Geology and Land Survey will receive approximately $300,000 during the next three years.

The funding will be used to develop and provide numerical data for a comprehensive nationwide resource data system by the nation's state geological surveys to identify and assess new geothermal fields. The grant is the second largest awarded by DOE for geothermal energy out of federal stimulus funds.

The Association of American State Geologists organized a coalition of 46 of the nation's state geological surveys to populate a new National Geothermal Data System with state-specific geothermal data. As a member of the coalition, the Geological Survey Program will be collecting and contributing data from Missouri that will aid industries in the identification and development of geothermal energy and integrating them into the Web-based National Geothermal Data System.

Missouri will compile location information for water wells, oil and gas wells, ground-source heat pumps, rock core and cuttings. Temperature data will be collected from oil and gas production, existing deep municipal water wells and wells currently under construction. This information will be combined with existing geologic data to compile a statewide temperature gradient map that will be available in digital format.

This national collaboration of state and federal agencies, universities and industry, has the potential to reshape America's energy landscape, reduce greenhouse gas emissions and leverage non-renewable petroleum resources well into the 21st century.

More information may be found at: dnr.mo.gov/geology.

Review Your Drinking Water Consumer Report

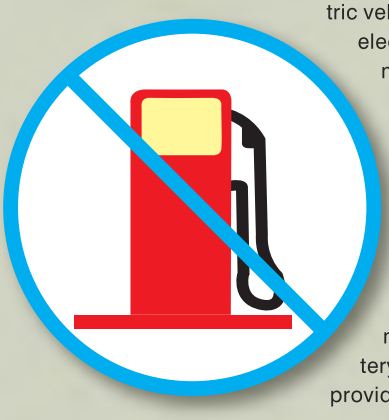
To learn about the water you're drinking, read your water system's annual drinking water quality report. The reports, called

environmental notes

Electrifying News: Gas Use Fading

For those who love the throbbing rumble of a big road bike or large block V-8, look out, the age of quiet-running electric vehicles has arrived.

By the end of 2010, it is expected that General Motors' Chevrolet Volt will be available for around $41,000. The Nissan Leaf, out about the same time, will cost about $33,000. Both prices may be reduced by a $7,500 federal tax credit for electric vehicles. Chrysler announced it would put an electric version of the small Fiat 500 on the market by 2012.



GM is expected to produce about 10,000 Volts during the first year, directed to California, Michigan and Washington, D.C. markets. By late 2012 the car is scheduled to roll out nationwide.

The Volt will rely on a battery with a 40-mile range, enough for 75 percent of commuters driving to work and back. As the battery is depleted, a gas-fired generator will provide electricity to continue the trip.

The Nissan Leaf, a fully electric family car, also known as an electric vehicle (EV), will come with a 24-kilowatt-hour battery pack. That sort of capacity is close to the average American household's daily consumption of electricity – 30 kilowatt hours, according to 2008 figures from the U.S. Department of Energy.

The electric version of a light-duty Ford cargo van that has sold more than 600,000 units worldwide since 2003, the Transit Connect Electric, is the first of four electrified vehicles the Detroit manufacturer plans to bring to market by 2012. The Ford Focus Electric passenger car is due out in 2011; plug-in and next-generation hybrids would be available over the next two years.

Smith Electric Vehicles U.S. of Kansas City has began production of the Smith Newton, a medium-duty electric delivery truck developed in England. A 200,000-vehicle annual market is anticipated for such trucks.

Plug-in hybrids' (PHEVs) batteries have lower capacities – five kwh in the case of the Toyota Prius and 16 kwh for the Chevrolet Volt. These batteries can draw charge from their gasoline-driven engines, but they also may consume additional power from the grid. Battery-powered motors cost drivers, on average, only 2.5 cents a mile for fuel, less than a third of the cost of a highly efficient gasoline car.

As electric vehicles roll out, owners will be wiring their homes for Level 2 charging. These wall-mounted 220-240-volt boxes can recharge an EV's batteries in four hours to eight hours. Most people will likely program the boxes to charge only late at night when energy rates are low, as part of a Smart Grid system.

Kansas City Power & Light hopes to open its first of 10 public charging stations next year in midtown Kansas City and is considering educational campaigns to tell customers about what is involved in owning an electric vehicle.

According to MarketResearch.com, about 700,000 electric vehicles were sold around the world last year – the vast majority were electric-hybrid models. They are coming to a garage near you.

Consumer Confidence Reports, are to be distributed to consumers by public water suppliers no later than July 1.

The report provides detailed information regarding the source of the drinking water and quality of the drinking water provided to the community during 2009.

All 1,476 community water systems in Missouri are tested, often by the state. Others are tested by private laboratories. These systems include cities, water districts, subdivisions, mobile home parks and other water systems serving at least 25 individuals. Large water systems, serving more than 10,000 people, must directly deliver a copy of the report to each customer. Smaller systems may deliver the report by mail, publish it in the local newspaper, or post it at the water system's office, public buildings or the local library. The report also allows water suppliers to educate consumers about the sources and quality of their drinking water and involve them in decisions about it.

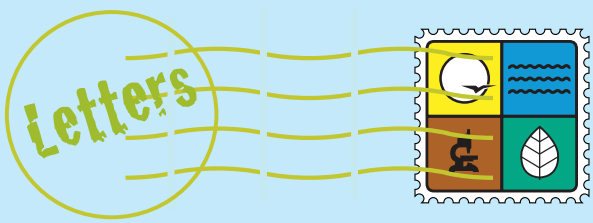
Any citizen served by a community water system who wants to know more about their drinking water and has not received a Consumer Confidence Report should request a copy from their water provider.

For more information on Missouri's drinking water, contact the Department of Natural Resources' Public Drinking Water Branch at 800-361-4827 or 573-751-5331.

Missouri Fifth in 2010 Solar Race

The American Solar Challenge, a competition to design, build and race solar-powered cars in a cross-country event, began in Tulsa on June 20 and traveled 1,100 miles to Naperville, Ill., finishing on June 26.

Missouri S&T's Solar Miner VII, finished fifth, with a time of 32 hours, 53 minutes and 56 seconds. The top four finishers were the University of Michigan, the University of Minnesota, Germany's Hochschule Buchum University of Applied Science and Stanford University, California.



Thank you so much for all of the effort you put forth to keep our state parks beautiful. We recently stayed at Onondaga State Park and, oh my goodness, how beautiful it is. We stayed only one night but are planning to go back very soon. The grounds were pristine, the facilities clean, the RV pads were concrete and level, and all of the people we encountered were so helpful and kind. One of the things I most noticed were the grounds were so carefully mowed and free of any kind of trash.

Thank you for everything you do. We are trying to visit each of our state parks. So far we have only stayed at three of them, but then again, we just got our RV.

Gretchen Engel
St. Louis

The Spring/Summer edition of *Missouri Resources* was simply outstanding. (This was no surprise because each edition is better than the one before!)

I particularly enjoyed the articles on the "Greening" of Johnson's Shut-Ins State Park, on Elephant Rocks State Park and on the growth of solar power for residential usage. The tips on recycling at public events (such as that done by the Mizzou Tiger Tailgaters) are very helpful, practical and informative. Like other issues of *Missouri Resources*, it also contained excellent articles on the very important topics of clean water, Stream Teams and regulation of landfills.

If everyone who received this magazine took the time to implement just one of the many recycling or energy-saving tips found in each issue, Missouri would be far ahead of the nation in these crucial components necessary to protect our environment.

As so eloquently stated by the revered Missouri conservationist, Leonard Hall, in his book *Stars Upstream*: "The need to preserve areas that are wild and natural increases in America with each day that goes by; for it has been truly said that wilderness is a resource which can shrink but never grow." Mr. Hall firmly believed that we are stewards of the land with the duty to preserve the environment inviolate from further destruction in the name of progress, which "takes no account of natural values."

I am already looking forward to the next issue of *Missouri Resources*. Keep up the great work!

Dudley McCarter
Clayton

Just a note to let you know how much I enjoyed the Spring/Summer issue. I read and enjoy them all, but especially enjoyed this one – beautiful pictures and illustrations. I am pleased to hear about the restorations at Johnson's Shut-Ins State Park and improvements at Elephant Rocks. I turned 90 years old September 2009.

Mrs. Vernon L. Henderson
Eureka

Letters intended for publication should be addressed to "Letters," *Missouri Resources,* PO Box 176, Jefferson City, MO 65102-0176 or faxed to (573) 522-6262, attention: "Letters." Please include your name, address and daytime phone number. Space may require us to edit your letter. You also can e-mail *Missouri Resources* staff at moresdnr@dnr.mo.gov.

Seventeen cars started and 12 finished. The cars ran at the posted speed limits most of the time.

Checkpoints in Missouri included Neosho, Jefferson City and Rolla. The Department of Natural Resources hosted an Energy and Innovation Fair on the State Capitol's south lawn to showcase the race and celebrate science, engineering and technology.

Visitors to the fair were able to watch and ask questions of the various race teams while they raised their car's solar panels to collect sun rays and complete their daily road checks.

For more information, visit: dnr.mo.gov/solarrace.htm; americansolarchallenge.org/events/asc2010/; solar42.mst.edu/; and, experencethis.mst.edu/.

Permit Modifications List Available Online

Facilities or businesses that want to actively treat, store – for more than 90 days – or dispose of hazardous waste in Missouri must get a Missouri Hazardous Waste Management Facility Permit. A hazardous waste permit is a legal document that lists how and what kind of hazardous waste the facility can handle. It also lists the facility's operating conditions and closure, corrective action and financial assurance requirements.

The public is invited to review the Missouri Department of Natural Resources' list of approved hazardous waste permit modifications for calendar year 2009. The permit modifications list is online at: dnr.mo.gov/env/hwp/permits/publications.htm.

The Department or the facility can make changes to the hazardous waste permit. Usually the facility owner or operator asks for the permit modification. Permit modifications are labeled as Class 1, 2 or 3.

Class 1 modifications include small changes that keep the permit current with routine changes to the facility or

Stream Team Notebook

Fifty Years Cleaning Missouri Streams

The Ozark Wilderness Waterways Club was organized in 1956 by a group of paddlers who wanted to protect Ozark streams and rivers. They believed that work would be needed to preserve the streams they enjoyed floating so much. They soon established a goal – "… encourage preservation of environmental integrity and protection of river ways for the benefit of present and future generations by stewardship, advocacy and education."

In 1960, they organized their first Labor Day river cleanup on the Current River and have done one every year since – each time on a different stream. Recently, 70 present and former members gathered to celebrate 50 years of cleaning up rivers. Some came from as far away as California and Seattle, Wash. The OWWC won a Stream Team Ambassador award last summer for their tireless efforts.

When the Stream Team program formed 20 years ago, OWWC quickly joined and became Stream Team #41. When Volunteer Water Quality Monitoring became a Stream Team activity, club members eagerly signed up for training.

Ron Bishop, Al Hussar, Greg Hall and Richard Guyn are among a dozen or so club members trained to monitor water quality. They monitor the Blue River close to the point where it leaves Kansas – which is fitting since three of the four actually live in Kansas. They believe the Blue River is "holding its own," and often find pollution-sensitive macroinvertebrates in the river.

Ron Bishop photo

Greg Hall, Richard Guyn and Al Hussar survey the kick net looking for macroinvertebrates.

When planning the next cleanup project, all agree they need local participation. They will contact local Stream Teams, canoe outfitters and others to help them. Hall said that they see less trash in float streams now and he believes that this is due to the Stream Team's red mesh trash bags being handed out by local float outfitters.

Bishop said that they were really glad to see legislation banning glass on the rivers and streams. "We sometimes are floating along with a canoe full of glass bottles, but we don't get in trouble," he said. "They know we are cleaning things up. And we are seeing less broken glass now."

Hussar added, "The float outfitters are great. Once we explain what we are doing, they always offer advice on access points or camping sites."

For more information about the group, visit their website at: owwckc.org.

MISSOURI STREAM TEAM

Time Exposures

A 1944 trail ride at the Alton Club – the future home of DNR's Current River State Park – included sisters Oneitta, left, Florene and Juanita Jones, along with friend Velma Hays and Mr. Woods, the Alton Club guide and handyman. The sisters' uncle, Evert Jones, managed the club from the early 1940s to the late 1960s. The photo was provided by Juanita M. (Jones) Moore, St. Louis. She recalls spending a few weeks of her summer vacations at the club, with various members of her family. She enjoyed the gym and one-lane bowling alley. When guests arrived, she would help wash dishes.

"I am so happy it is becoming a state park so people can take advantage of the beauty there," said Mrs. Moore. "I am now 83 and hope it opens soon. I have so many happy memories of my times at the Alton Club."

Send your photo to "Time Exposures," c/o Missouri Resources, PO Box 176, Jefferson City, MO 65102-0176. Original photos will be returned via insured mail. Pre-1970 environmental and natural resource photos from Missouri will be considered. Please try to include the date and location of the picture, a brief description and any related historic details that might be of interest to our readers.

the normal day-to-day operations of the site.

Class 2 modifications include necessary changes that allow the facility to respond to changes in the type or amount of wastes handled, scientific improvements and new laws.

Class 3 modifications include issues that largely change a facility or its operations – for example – a request to handle new wastes that require different management practices.

For more information or a hard copy of the permit modifications list, contact the Hazardous Waste Program's Permits Section, at 800-361-4827. Hearing- and speech-impaired individuals may reach the Department through Relay Missouri at 800-735-2966.

Plan for Drinking Water Funds is Set

The Missouri Department of Natural Resources has reviewed the 2011 draft Drinking Water State Revolving Fund Intended Use Plan. Each year, the department prepares a plan describing how it intends to use federal and state funds to finance the Drinking Water State Revolving Fund program. The final draft was approved by the Missouri Safe Drinking Water Commission on June 22, 2010.

The Department uses this money to make low-interest loans to public drinking water systems. These loans help the systems improve infrastructure, comply with the Safe Drinking Water Act and protect public health.

The interest rate on the available loan funds this year will be approximately 30 percent of the interest rate usually offered on a market rate loan. The Department of Natural Resources uses a smaller amount for Public Drinking Water Program administration and technical assistance.

The Department anticipates there will be approximately $56 million made available this year for low-interest loans to drinking water systems and approximately $8 million available for other authorized activities. In addition, approximately $8 million will be used for additional subsidies in the form of grants for those projects.

The Department also has solicited comments that will be used to prioritize new applications received for fiscal year 2012. Except for minor updates that do not affect the basic criteria, the Department is proposing no changes to either of the standards approved last year. The deadline for 2012 applications has been set for Nov. 15, 2010.

A copy of the Drinking Water Intended Use Plan and criteria can be found on the Department of Natural Resources website at: dnr.mo.gov/env/wpp/srf/dwsrf-iup-final.pdf, or call the Department's Water Protection Program at 800-361-4827 or 573-751-1300.

For news releases on the Web, visit: www.dnr.mo.gov/newsrel/index.html. For a complete listing of the Department's upcoming meetings, hearings and events, visit the Department's online calendar at: www.dnr.mo.gov/calendar/search.do.

Adopt-the-Shoreline 20-year Legacy

For nearly 20 years, a growing army of volunteers has gathered for a few weeks each spring and fall to remove trash from the Lake of the Ozarks shoreline – in the back of isolated coves and in front of upscale condo developments.

This is no small task. The lake has more than 1,500 miles of shoreline – more than the entire State of California's ocean-front property. As the lake filled up in the 1930s and electrical generation began at Bagnell Dam, fishing camps and private cabins gradually claimed the shore. Although the actual lake is now owned and operated under federal permit by AmerenUE, lake residents and businesses take pride in ownership of land above the lake's full line and have developed a sense of responsibility for keeping the shoreline and property clean.

In the early 1990s, it became apparent that the trash collection job was growing as quickly as the huge resorts and vacation home developments emerging along the shoreline. The utility management and local property owners founded the Adopt-the-Shoreline program and cleanup volunteers became organized. It began with nine civic groups adopting 89 miles of shoreline.

The annual effort caught on, and then some, including adding a fall cleanup. During the spring 2009 effort, 864 volunteers from 69 member groups removed a record 3,030 cubic yards or 233 tons of trash from 500 miles of shoreline. During the fall cleanup in 2009, volunteers gathered another 266 tons or 3,967 cubic yards of trash. More than 95 roll-off dumpsters were used to collect it. AmerenUE paid more than $50,000 to dispose of it, but with the help of Materials Processing Center and Allied Waste Service, Osage Beach, 85 percent of the material was recycled.

"Ninety percent of what we remove has been non-encapsulated boat dock foam," according to Bryan Vance, field coordinator for AmerenUE's Lake of the Ozark Shoreline Management. "Dock foam never goes away."

Bryan Vance photo

Volunteer shoreline cleanup at Lake of the Ozarks, Fall 2009.

In 1995 the utility banned the use of new "white dock foam" on the lake and gave dock builders and owners until Jan. 1, 2008 to get it out of the environment and replace it with floatation foam that is encapsulated in a tough plastic shell. During the spring 2010, 19th Annual Shoreline Beautification Cleanup, volunteers found significantly less trash, debris and white dock foam.

"This spring, the Adopt-The-Shoreline volunteers say the amount of large pieces of non-encapsulated foam was less than half of what they picked up last year – which is great news for everyone working to keep the lake clean," said Vance. The 749 volunteers removed 1,690 cubic yards of trash and debris, 130 tons, from residential shores and back-water coves. "We have a great group of volunteers and we have thousands of homeowners who will clean up their beach and put the trash into a convenient pile for us to come by in a pontoon or will call one of our volunteers to pick it up. It really is an efficient way to clean up a large lake."

Jerry Barton Man With a Mission

Jerry Barton, leader of Stream Team 3550, is a man with a mission. He lives near Leadwood, on the Big River, in southeast Missouri. His goal is to leave a legacy – a Big River that is cleaner and healthier. The task is challenging, since eroding piles of lead mine tailings in St. Francois County have given the Big River a reputation as "the most polluted river in Missouri." Barton has approached his mission with enthusiasm that is always tempered by a blend of civility and skepticism.

At first glance, Barton seems like many other Stream Team leaders, committed to clean, protect and defend "their" river or stream from all threats – especially discarded tires and trash. However, after a few hours talking with him, one finds that Barton's main strength is the ability to recruit and organize other local families and community members who share his passion for the Big River. Barton believes that if people come to know the river, they will love it. If they love the river, they will care for it.

This devotion can pay unexpected dividends. In May 2008, Barton and members of Stream Team 3550 recovered a stolen ATM from the river bottom. Except for some fish, the 200-pound ATM was empty. A St. Francois County deputy sheriff took on the investigation, but couldn't speculate on how the old ATM got into the river. The team also recovered three tons of trash – including a dryer, 48 tires, a couch and swimming pool – that day.

While his primary focus is on the Big River watershed in St. Francois County, Barton's energy has also led him to organize and encourage river cleanup efforts on Breton Creek, Fourche Creek, Sunnen Lake and the Huzzah River in nearby Washington County. The Mayor of Potosi has asked Barton for his help, even though he doesn't live in that community or even reside in the county.

Thomas Bull photo

Jerry Barton

In addition, Barton routinely spends time and energy in fifth-grade classrooms throughout St. Francois County. He believes, if you teach the children, they will teach their parents. He usually invites someone who is knowledgeable on lead contamination issues to accompany him – often from the U.S. Fish and Wildlife Service. At a joint presentation, Barton focuses on the river clean-ups and the FWS personnel speak about stream health in general. Big River is affected by its lead mining waste issues and lead contamination has an impact on the aquatic life living in the river bottom, including freshwater mussels.

Barton's ability to collaborate with diverse river community stakeholders, such as corporate representatives, federal and state agencies responsible for Superfund cleanups, local educators and public health representatives have made him a welcome voice in discussions where good will and reasonable minds may disagree.

At every bend and rapid, Barton has stood as an advocate for the Big River, expressing his love for a place and a stream that endears him to the local community. Jerry Barton's mission will continue as strongly as the Big River flows.

Nature Lover's Playground

by Tom Uhlenbrock
photographs by Scott Myers

The Meramec River and its rich bottomlands have attracted both settlers and visitors for more than a century. Today, Robertsville State Park sits on 1,224 acres of fields and forest that are especially popular with nearby residents.

"We get a lot of day use, a lot of walkers, some with their dogs," said Dan Wedemeyer, facility manager for the Division of State Parks of the Missouri Department of Natural Resources. "They park at the entrance and walk down to the river and back."

When the park opened in 1989, the area of eastern Franklin County was on the outskirts of metropolitan St. Louis. But with the suburban growth of recent decades, the population has moved west and more

people live within an easy drive of the facility.

"The park has a really strong local group. They consider this their park," Wedemeyer said.

"We get a lot of families that come here from St. Clair, Pacific and Robertsville."

The little town of Robertsville is named for Edward James Roberts and his family, who moved from Virginia to Franklin County in 1831. The family once owned a 3,000-acre farm known as the River Hills Plantation.

The Roberts raised livestock and planted crops in the rich and fertile bottomlands. They brought with them their Southern traditions, growing tobacco and holding slaves.

The park includes the Roberts family cemetery, and the private Shiloh cemetery. Historians are examining a third area that may have been a slave cemetery.

When the Frisco Railroad extended west from St. Louis, it built a station on the Roberts property. In the early 1900s, a resort called Meramec Terrace was built overlooking the river and included houses that were used by urban visitors who arrived on the daily train trips from St. Louis.

In more recent times, another group of investors planned a resort and golf course for the area, but that never materialized. The state bought the land because of its recreational potential near a major metropolitan area. The park is an important component of the Meramec River Recreation Association, which promotes open spaces along the river.

"They are still working on the Meramec Greenway," Wedemeyer said. "This will be an anchor for the chain of parks along the Meramec."

Because of its mix of old farm fields, rolling hills of hardwoods and bottomland forest along the river, Robertsville State Park is a nature lover's delight. A morning drive through the park revealed deer, a red-tailed hawk, bluebirds, indigo buntings and a brown thrasher.

Two miles of the Meramec border the tract on the north and west, and Calvey Creek forms the eastern boundary. The Park's floodplains and sloughs attract a variety of waterfowl and shorebirds such as herons and egrets. Bald eagles not only frequent the park during winter, but build their massive nests in the majestic sycamores growing along the Meramec river bank.

The park has 25 campsites, some with electricity. Each is situated within the forest, a short walk from a shower house that includes restrooms and laundry facilities.

"They have a thicker tree and brush cover than any park I've been in," Wedemeyer said of the camping areas. "The campsites are not real busy during the week but can become completely full on the good weather weekends."

(Opposite page) The Heider family, from Catawissa, try catching a big one at Robertsville State Park. (Above) The Adkins family, Robertsville, have a hot dog roast in the shady camping area. (Below) The park's campground hosts, Billy and Lynn Barnett, Pacific, and Gloria and Rick McKeel, Sioux Falls, S.D., relax in the campground area with electrical hookups. Tent campers also set up in the shaded campsites.

The Meramec River is a popular spot for many kinds of water recreation at Robertsville State Park.

As park visitors and local residents will attest, the park's boat ramp also is a busy place on weekends. While boating, fishing and canoeing are popular, swimming is not allowed because the Meramec's banks are steep and muddy.

The park has a small fishing lake, the mile-long Spice Bush Trail through the bottomland forest, picnic sites, two covered shelters available for rent and a playground.

Park personnel learned just how popular that playground was with local residents during a short period of time when it was closed for scheduled renovations.

"We were getting three and four calls a day," Wedemeyer said. "They'd say, 'Our kids want to come out to the park and play.' "

Robertsville State Park is located just east of Robertsville on Highway O in Franklin County. For more information on the park, call 636-257-3788 or the Department of Natural Resources toll-free at 800-334-6946. You can also visit parks' website at: mostateparks.com.

Tom Uhlenbrock is a writer for the Department's Division of State Parks.

Tina White

Keeping Discharging Facilities in Line, and Online

by Victoria Lovejoy
photographs by Scott Myers

A new day dawns on the Department of Natural Resources' Southwest Regional Office in Springfield. Tina White, water pollution inspection and enforcement unit chief, sits at a desk that seems disorderly with all its paperwork. Just as Snow White brought order and cleanliness to the Seven Dwarfs, this White manages a unit of seven staff that work to keep the region's water resources clean.

"It feels like a family here," said White. "We are passionate about protecting our environment. When you really care about what you do, about … your work, then you do whatever it takes to get things accomplished."

White and her unit are tasked with inspecting facilities that have the potential to discharge pollutants into the waterways we all enjoy. These facilities range from commercial industries and licensed wastewater treatment plants to concentrated animal feeding operations.

There are more than 3,000 permitted facilities in the region's 25 counties. These counties encompass an area from the Lake of the Ozarks to the Arkansas line and from the Kansas/Oklahoma line to the far reaches of Douglas County. Covering so many facilities in such a large area may seem like an overwhelming task but White is confident in her team of seven. Southwest Regional Office Director Cindy Davies shares that confidence and is proud of the job White is doing.

"Regional office unit chiefs like Tina have the daunting job of protecting vast areas of the state with very few staff resources," Davies said. "To do this they must be able to find ways to evaluate and utilize the strengths of each employee to complete the various requested activities."

In addition, it is critical for these managers to have the ability to find ways to streamline work through innovative methods and creative thinking.

"We knew early on that Tina was up for this task when she developed a template discharge monitoring report for our water pollution facilities," Davies said.

(Below and left) Tina White travels to a variety of locations in 25 counties to inspect facilities that may discharge pollutants to Missouri water resources.

(Right) Finding the water source to be tested can be a challenge for White and her crew if the stream or pond is surrounded or covered by driftwood or windfalls. (Below) White takes a sample to find out if an outflow pipe is releasing clean water or there is some level of measurable pollution.

The template helped our staff complete tracking of these reports in a timelier manner and helped our regulated facilities better understand what was required."

The regional office responds to nearly 500 water-pollution-related citizen environmental concerns each year in addition to their regular inspection work. These dedicated inspectors also are often called on to respond immediately to potential environmental emergencies.

"We track the number of inspections, concerns, emergencies, overflows, letters of warning, etc., on a quarterly basis, so I keep an eye on each employee's activities as well as provide an overview of the unit," said White. "I know my staff members are working very hard. The fruits of their labor come back to me in waves of reports that keep me hopping."

To provide the best overall service to the public, White's inspectors work closely with the other units in SWRO, such as solid waste, air pollution, hazardous waste, public drinking water, water pollution permitting and assistance, and engineering. They also coordinate with other agencies, such as the Missouri departments of Conservation and Health and Senior Services. To protect water quality, White and her team carry this network of combined knowledge with them every day.

Recently, SWRO water pollution staff, permit writers and engineers participated in a month-long inspection initiative involving more than 400 facilities at the Lake of the Ozarks. In addition, SWRO is preparing for future inspection initiatives in other areas such as the Spring River. These initiatives take a great deal of planning and oversight but also provide another tool for ensuring environmental protection.

"It is a challenging and rewarding job," White said. "There is never a dull moment. Just when I think, 'Ah, the last concern is off of my desk, it's Friday, nearly five o'-clock and I can relax,' is when we get a call that requires our response. Then it's off to work we go! So much for clearing off that desk … Hi Ho, Hi Ho."

White earned a Bachelor of Science degree in Wildlife Conservation and Management from Southwest Missouri State University, Springfield. She interned for the Missouri Department of Natural Resources from 1995 to 1996. White then worked as an Environmental Public Health Specialist at the Webster County Health Department before she returned to DNR full time in 2000.

For more information about career opportunities with the State of Missouri, visit the Office of Administration's website at: oa.mo.gov/pers/.

Victoria Lovejoy is a public information specialist at DNR's Southwest Regional Office in Springfield

With the State Parks Youth Corps

by James Saracini
photograph by Yaryna Klimchak, State Parks Youth Corps

State Parks Youth Corps employees Brennan Lowry and Westly Nachbar, and Finger Lakes parks maintenance worker Dan Couch discuss the projects they will tackle for the day.

This summer, the Missouri state park system lent a helping hand to more than 1,000 young people age 17 to 24 through the State Parks Youth Corps program. They offered them summer employment, while making Missouri's parks and historic sites better for visitors.

Some of the young men and women blazed trails, some ran offices and worked with visitors, some organized events and some took video and photographs for the rebuild of the Missouri State Parks' website. The federally funded program was announced Feb. 25 by Gov. Jay Nixon at Dr. Edmund A. Babler Memorial State Park in Wildwood.

The backgrounds, experiences and interests of the participants are every bit as diverse as the beautiful parks and historic sites where they worked. Jennifer Lutz, 20, learned the inner workings of business administration by helping out in the main office of Van Meter State Park, near Miami.

Lutz, an anthropology and history major at Missouri Valley College in Marshall, is also glad she found an opportunity to work in her field of study. "By working here in the American Indian Cultural Center," she said, "I learned the in and outs of running a place like this that preserves and holds artifacts and presents them to the public."

The experience "is right up my alley, and it'll be great to put on my resumé when I apply for jobs at museums and other places – like the state parks … . I'm really glad my professor told me to apply," Lutz added.

Jon Gill, 23, an SPYC worker at Thousand Hills State Park's marina, west of Kirksville, said, "The thing that's most important to me is getting young people out and interested in the outdoors, interested in the environment, interested in outdoor activities, because I think that a lot of us didn't get that in high school or younger."

Some youth corps employees got paid this summer to serve their community by clearing trails, such as the mountain bike trail Brennan Lowry, Westly Nachbar and Zach Lopez blazed in Finger Lakes State Park, north of Columbia.

"I get to work outside and do physical work, rather than sit inside a cubicle or in front of a desk; that's why I like it," said Lowry.

It's also a win-win for Missouri's state parks. "We've had a lot of requests for bike and walking trails over the years," said Dan Couch, an employee at Finger Lakes State Park. "Now that we have that manpower available … this will expand the amount of people coming into the park." Couch also oversees trail work at the park.

"For one thing, they're learning responsibility, and some of these kids never get a chance to get outdoors," Couch said. "They have been great and I am really pleased with the final product. It has helped us tremendously; I hope they do it again next year."

James Saracini of the State Parks Youth Corps is a 22-year-old native of Columbia, Mo. He recently graduated the University of Missouri School of Journalism and spends his spare time helping on his family's Moniteau County farm.

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